St. Elizabeths Outdoor Distributed Antenna System Installation

Design Modification

NCPC Final Design Submission

Submitted by the U.S. General Services Administration

January 14, 2015

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Notes:

A. Proposed Location 4 includes a “preferred” and an “alternate” location throughout this presentation.
B. Includes location key for photo simulations.

Project Report

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Project Summary

This design submission focuses on a design modification of the approved ExteNet Systems, Inc. ("ExteNet") temporary three node Outdoor Distributed Antenna System (ODAS) installation by adding 2 node locations to provide wireless coverage and capacity for at least three of the major Wireless Service Providers (WSPs). These additional node locations are needed so that coverage and capacity can be extended to wireless network users in the heart of the St. Elizabeths West Campus. One antenna set is to be located on an existing wood utility pole near the east side of the Center Building and is referred to as "Location 4". The other antenna set is to be located on an existing wood utility pole north of the west side of the Center Building and is referred to as "Location 5". The hub location that aggregates the signals from all the node locations was formerly approved but that outdoor location is no longer needed. Instead, space within an equipment room inside the Coast Guard Building has been identified and dedicated for this purpose. The temporary nature of the installation may be reconfigured in accordance with campus long term development. The footprint of the ODAS may need to grow in the future due to technological improvements but the purpose of this submission is to seek approval of Node 4 and Node 5.

The ExteNet design for these additional nodes focuses on providing outdoor commercial wireless coverage and capacity for the Phase 2 occupancy area previously approved by NCPC. The proposed coverage area for the ODAS comprises the center portion of the St. Elizabeth's campus. Federal government agencies use commercial wireless networks to achieve their missions. Without this ODAS, commercial wireless coverage and capacity on the campus will be limited.

Design Information

The proposed ODAS incorporates similar design characteristics found in other historic or visually sensitive deployments. The basic concept involved in these deployments is to conceal or limit the visual impact of the placement of the ODAS node equipment, antennas, and the hub site, given the RF, topology and WSP carrier customer requirements. The optimal RF coverage and capacity is balanced against the number and placement of the nodes and antennas, resulting in the proposed network design herein.

The anticipated technologies and frequencies that will be deployed are 700 MHz LTE, 850 MHz CDMA, EDVO and UMTS, and 1900 MHz CDMA, EDVO, LTE, and UMTS, and 2100 MHz LTE. In order to accommodate these WSP requirements, each of the two additional node placements will require two antennas. Use of existing freestanding wood utility poles for these two locations involves placement of two antennas on a support arm with the equipment placed in an enclosure on the ground. No ground disturbance is required.

The RF Compliance and Assessment Report has analyzed the emission levels of the proposed ODAS antennas and finds them well within the safety standards as required by current FCC regulations. Nodes 4 and 5 are to be placed on existing wood utility poles well above areas where they can be accessed without special equipment. Once the antennas are installed and operational at the sites appropriate signage will be placed to have the site in compliance. It should be noted that these and similar antenna configurations are used extensively in ODAS networks throughout North America.

Project Report (continued)

Relationship to the Master Plan

The design of the Phase 2 Outdoor Antenna Installation is consistent with the intent of the approved St. Elizabeths Master Plan and is in accordance with the St Elizabeths Design Guidelines Parcel 3 Site Development with the St. Elizabeths Design Guidelines Parcel 3 Site Development Standard:

Large-scale communication equipment will be positioned so as to minimize visibility from within the campus or from vantage points outside the campus… Smaller communication equipment will be confined to less visible areas of the parcel and will be located in a manner that will not damage historic fabric nor adversely affect views or spatial organization. Potential locations for equipment are in the center area and will not be visible from outside the campus.

Project Schedule

Construction commence: Winter 2015
Construction completion: Winter 2015

Project Budget

As this project is being funded by ExteNet and the WSPs, there is not anticipated to be any funding required from any Federal government source.

Environmental Documentation (EIS)

Visual impacts and the radio frequency emissions impacts from antennas were discussed in the 2008 Final Environmental Impact Statement (FEIS). According to the FEIS, GSA would employ the practice of "prudent avoidance" to reduce the exposure of workers and the public to RF fields. To ensure that this is accomplished a RF EME Compliance and Assessment Report was prepared for this project. The FEIS also discussed minimizing the visual impacts of any antennas placed on site and the locations of the antennas included in this submission were selected to minimize the visual impacts to the extent possible. The RF report and visual quality analysis is included in the submission package. The FEIS for the DHS Headquarters Consolidation at St. Elizabeths dated November 7, 2008 and the Final Master Plan Amendment FEIS for the DHS Headquarters Consolidation at St. Elizabeths dated March 2, 2012 can be referenced at www.stelizabeth'sdevelopment.com/document center

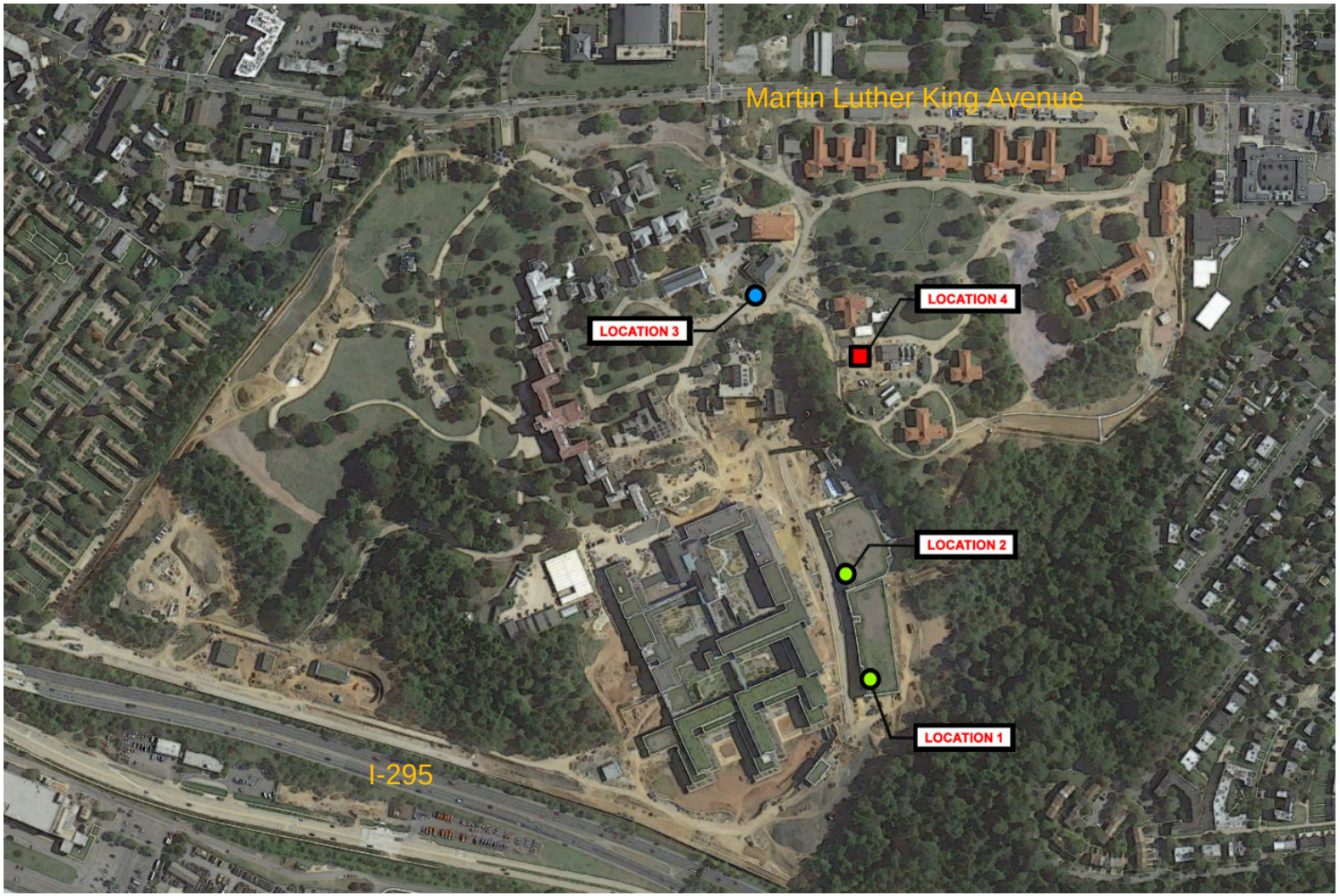
Historic Preservation Documentation

ExteNet is working with GSA to provide information so that a 106 determination can be made.

Floodplain Management and Protection

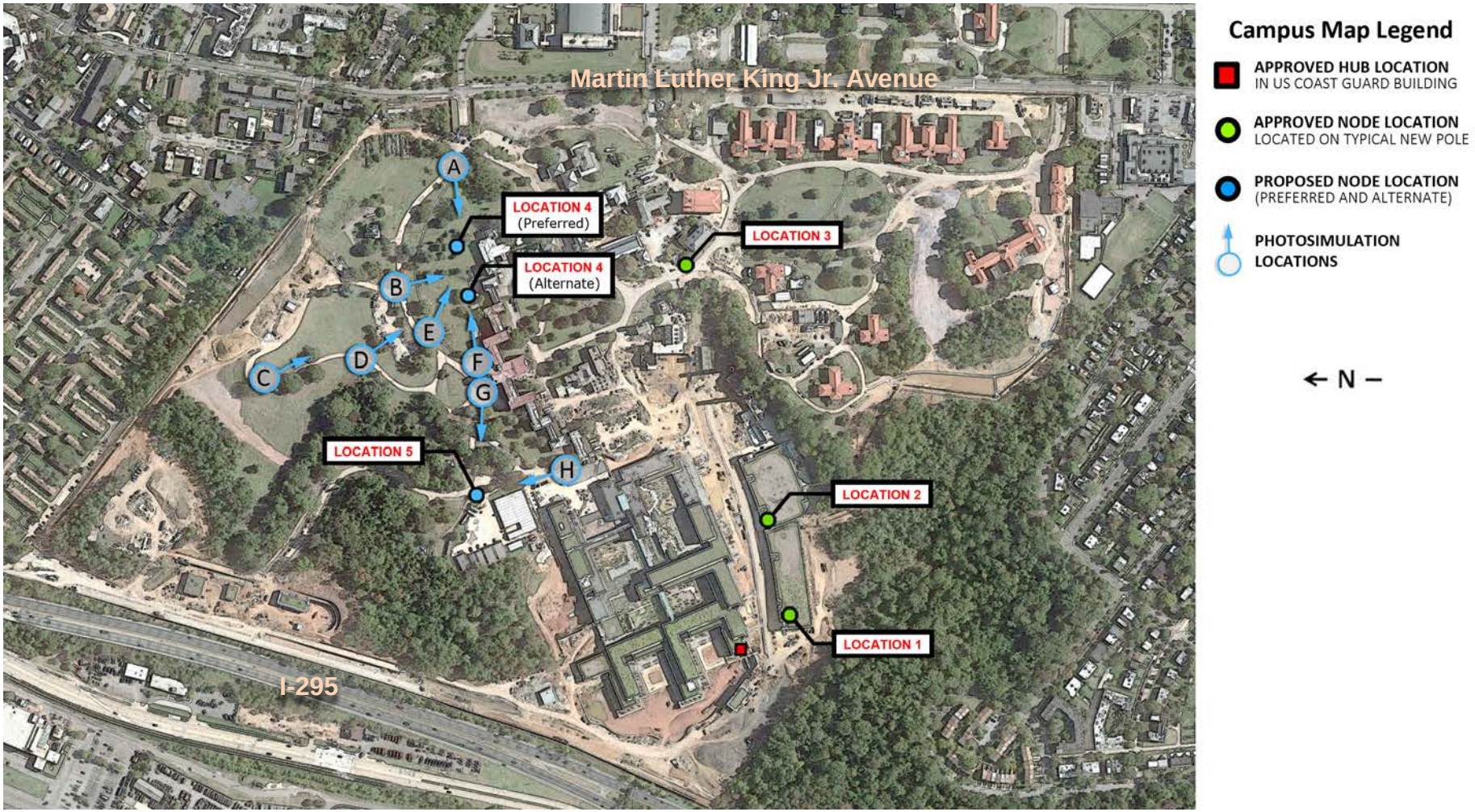
A review of the floodplain maps issued by FEMA in September 2010 for the District of Columbia indicate that the limit of work for the antennas is outside both the 100-and 500-year floodplain; no additional documentation is needed to comply with EO 11988.

Previously Approved Antenna and Hub Locations – West Campus Overview



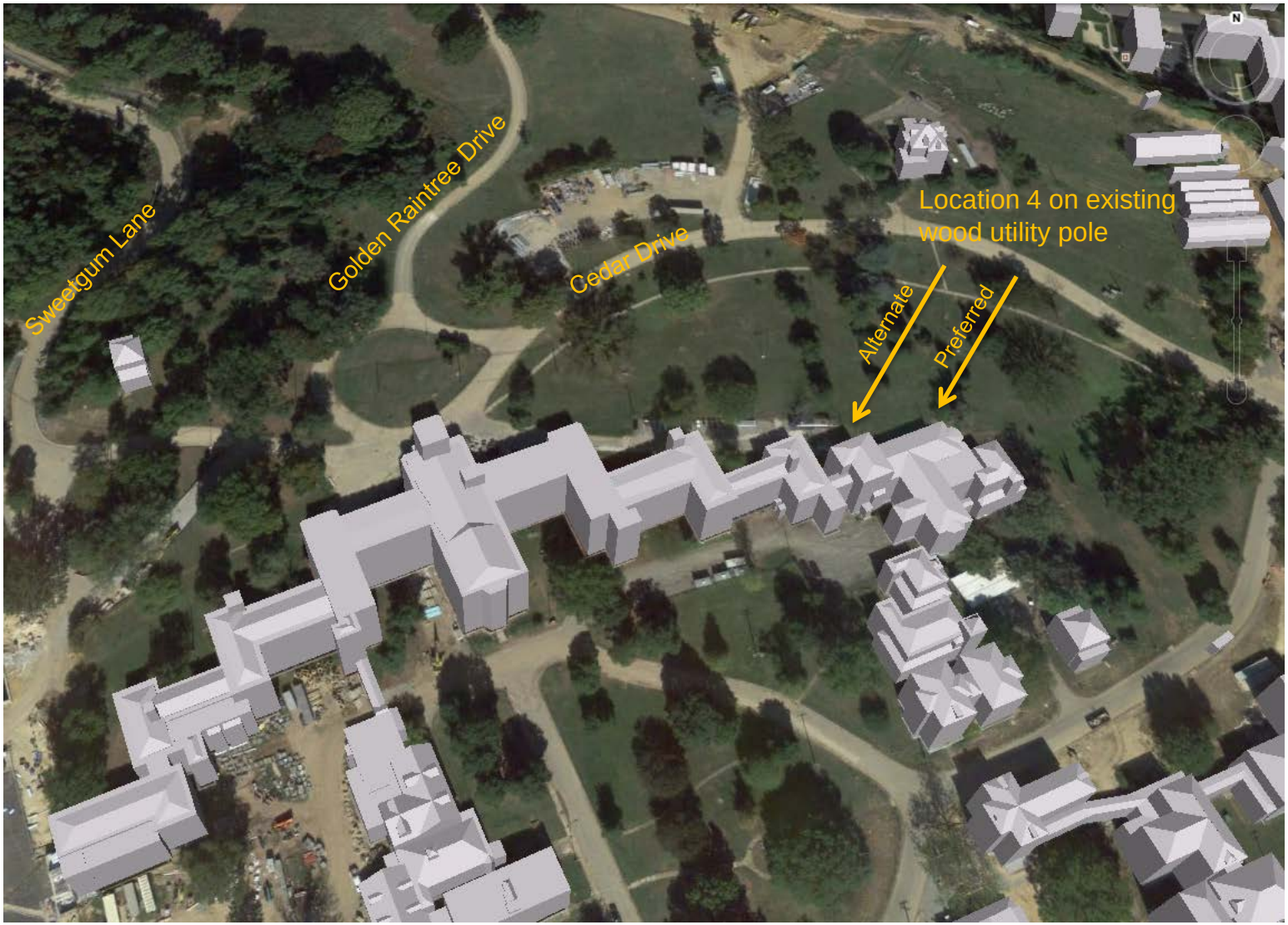
Antenna node locations 1,2 and 3, and outdoor hub equipment location 4 were previously approved.

Proposed Antennas: Node Locations 4 & 5 – West Campus Overview



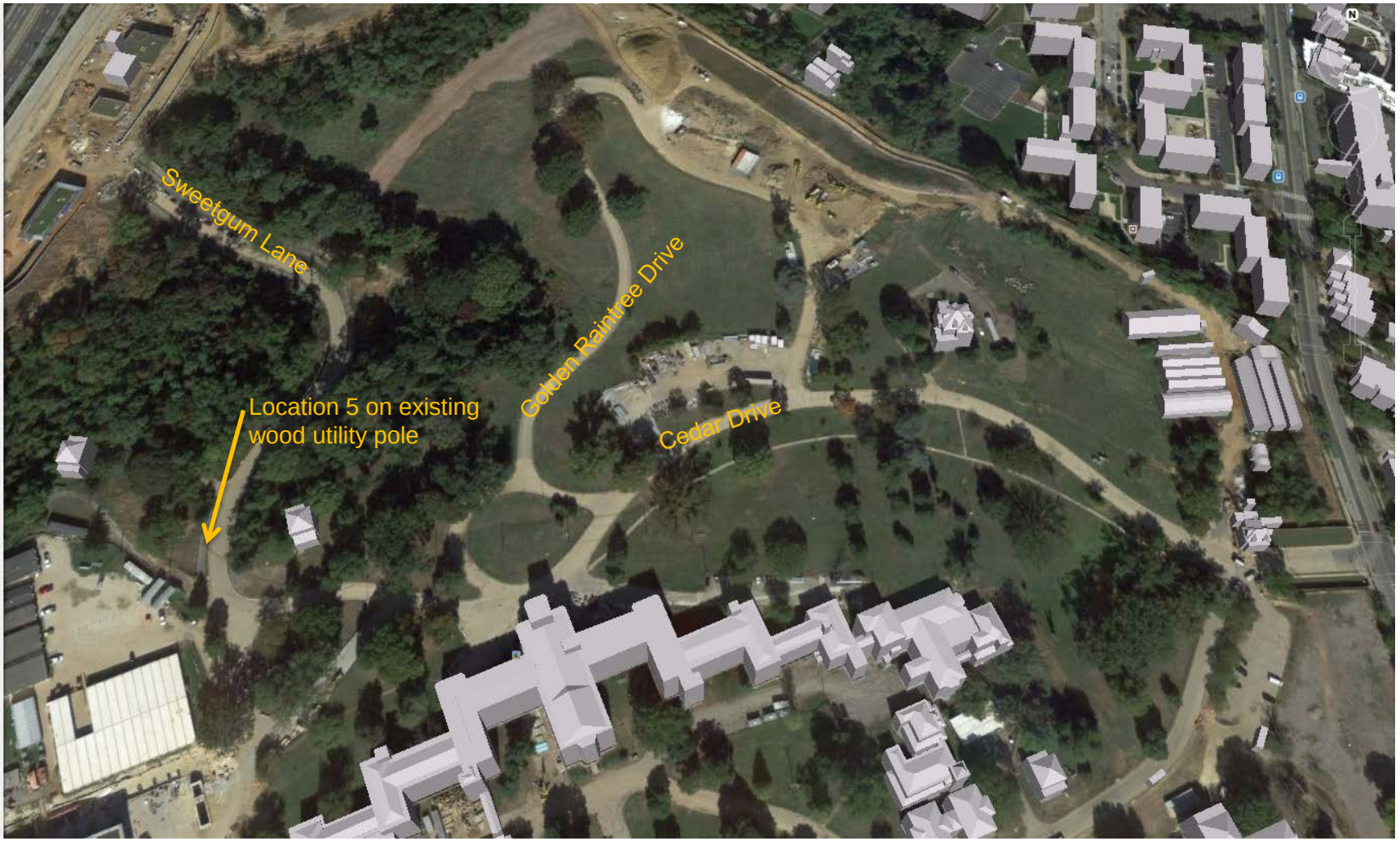
Note: Approved hub location formerly designated as “Location 4” is no longer needed. Hub location space is now being provided in a dedicated equipment room inside the Coast Guard Building. The new designations of “Location 4” and “Location 5” are being proposed as antenna locations. Location 4 includes both a “preferred” and an “alternate” placement.

Proposed Antenna – Location 4



Proposed antenna is to be mounted on an existing wood utility pole which is visible from adjacent buildings and roads. The "Preferred" Location 4 is approximately 50' away from the edge of the nearby parking lot on the front side of the building, and the "Alternate" Location 4 is approximately 15' from the edge of that parking lot.

Proposed Antenna – Location 5



Proposed antenna is a to be mounted on an existing wood utility pole which is visible from adjacent buildings and roads.

ODAS Antenna Requirements

Omni-Directional RF Antenna

Typical antenna with an integrated radome / shroud for optimal coverage and clean, low-key appearance

Number of Antenna / Transmitters: 2 for Location 4 and

2 for location 5

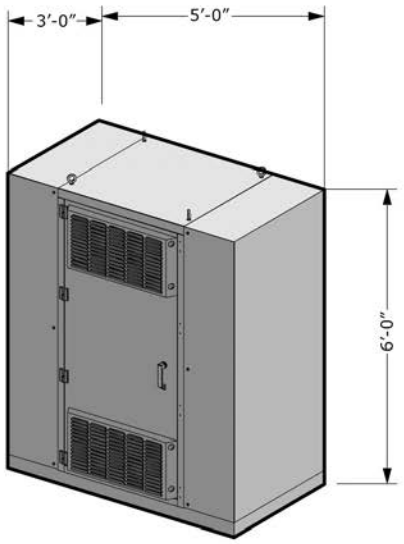
Photo of Pole Top Antenna

Close-up Photo of Antenna

Proposed Locations 4 and 5 – Antenna and Ground Cabinet Details

Existing wood pole with dual antenna

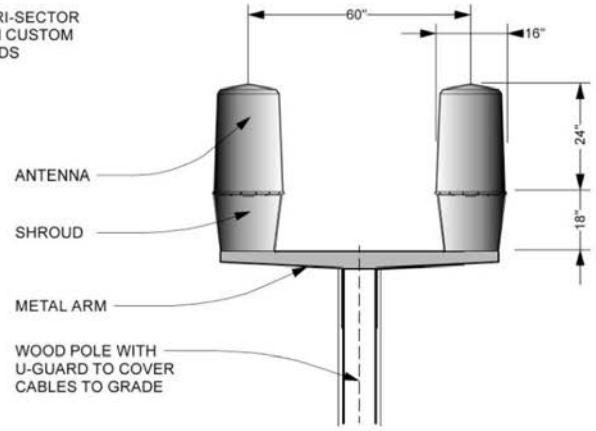
EQUIPMENT CABINET
GFC-AL-003 ALPHA
EQUIPMENT CABINET WITH
SIDE SHROUDS



DIMENSIONED DRAWING

PHOTO OF THE CABINET

ANTENNA ASSEMBLY
ANT-KT-013 KATHREIN TRI-SECTOR
ANTENNA ON POLE WITH CUSTOM
METAL ARM AND SHROUDS



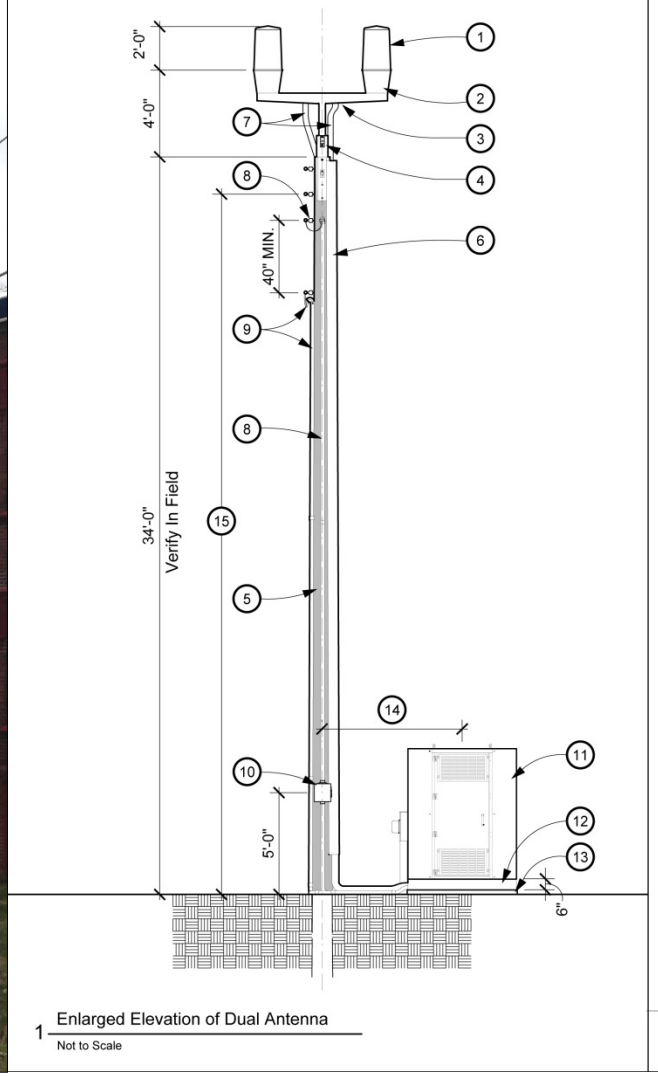
2 Units at top of pole for each location

DIMENSIONED DRAWING

PHOTOS OF THE ANTENNA

Proposed Location 4 – “Preferred” – Photo Simulation and Elevation

Existing wood pole with dual antennas



1 Enlarged Elevation of Dual Antenna
Not to Scale

Sheet Notes

1. **ANTENNA** KATHREIN 12-PORT OMNI
2. **SHROUD** CONE SHAPED COVER TO CONCEAL ATTACHMENT AND CABLING - PAINT TO MATCH POLE
3. **SUPPORT ARM** METAL SUPPORT ARM TO PERMIT REQUIRED HORIZONTAL SEPARATION OF ANTENNAS - SHAPE TBD, AS NEEDED TO PROVIDE STRUCTURAL SUPPORT AND CONCEAL CABLING FROM POLE TO SHROUD
4. **POLE EXTENSION** AS NEEDED TO RAISE ANTENNAS 4' FEET ABOVE EXISTING WIRES
5. **WOOD POLE** WOOD UTILITY POLE WITH APPROXIMATELY 5'-0" BELOW GRADE
6. **SURFACE MOUNTED CABLES** U-GUARD COVER OVER CABLES MOUNTED TO SURFACE OF POLE
7. **COAX CABLES**
8. **EXISTING POWER** CONNECTION TO EXISTING POWER LINE. 2" CONDUIT TO GROUND FURNITURE.
9. **NEW HORIZONTAL AERIAL RUN - NEW FIBER OPTIC** CONNECTION TO NEW FIBER CABLE. 2" CONDUIT TO GROUND FURNITURE.
10. **DISCONNECT** CONNECT TO NEW FIBER CABLE. 2" CONDUIT TO GROUND FURNITURE.
11. **GROUND FURNITURE CABINET** ALPHA METAL EQUIPMENT CABINET, PAINTED TO MATCH STANDARD COLOR POLE - LOCATE AT EACH NODE TO MINIMIZE VISIBILITY
12. **6" I BEAM STAND OFF**
13. **4" CONCRETE PAD**
14. **DISTANCE FROM POLE TO GFC** THIS DISTANCE WILL BE CONFIRMED ON SITE, BUT IS TYPICALLY LESS THAN 20'
15. **DISTANCE FROM GROUND TO EXISTING WIRES-** VERIFY IN FIELD.

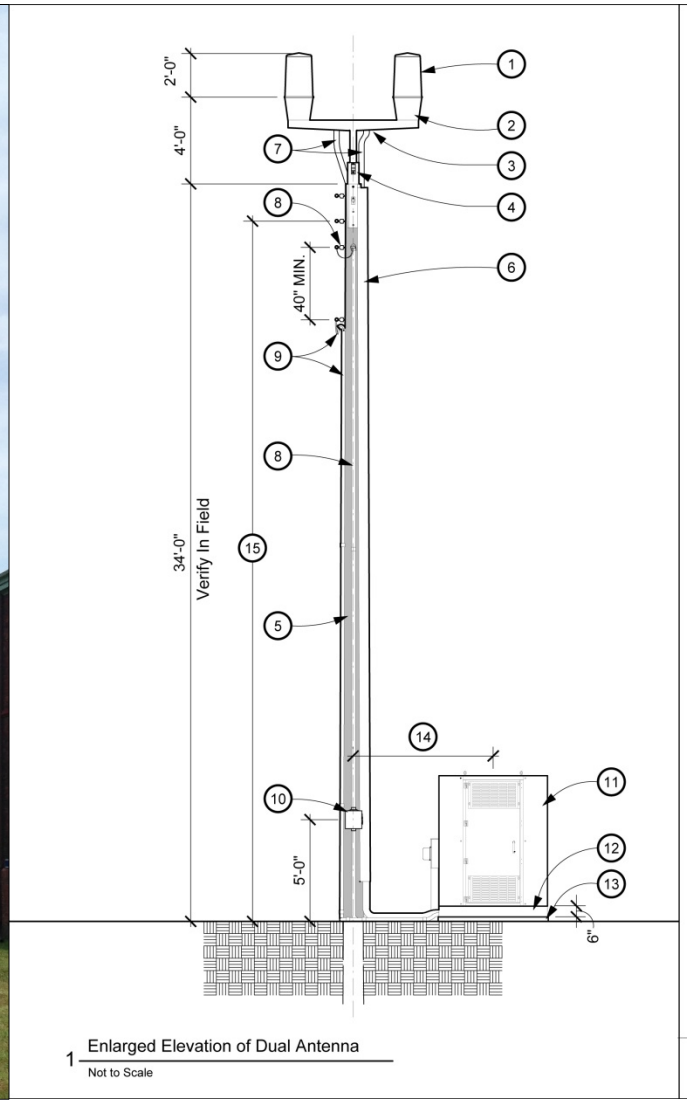
NOTE
CABINET WILL BE LOCATED CLOSE TO ONE OF THE ADJACENT BUILDINGS TO MINIMIZE THE VISUAL IMPACT

COLOR CODE ON SITE PLAN - SEE EX1.01

Note: Additional utility line is shown extending west (2nd line from the top of the picture).

Proposed Location 4 – “Alternate” – Photo Simulation and Elevation

Existing wood pole with dual antennas



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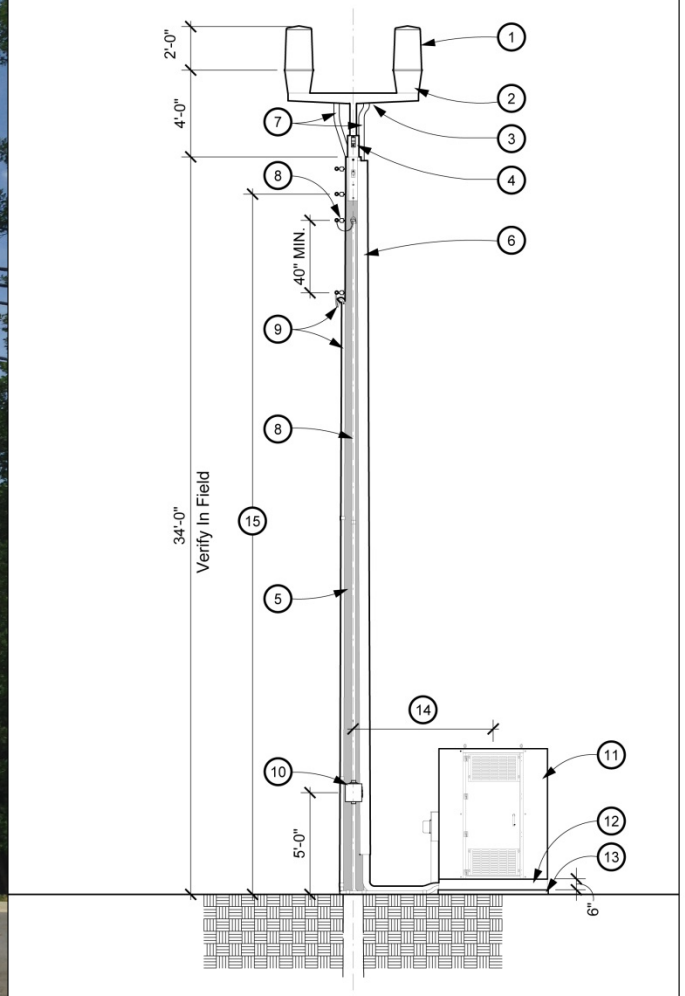
Note: Additional utility line is shown extending west (2nd line from the top of the picture).

Proposed Location 5 – Photo Simulation and Elevation

Existing wood pole with dual antennas



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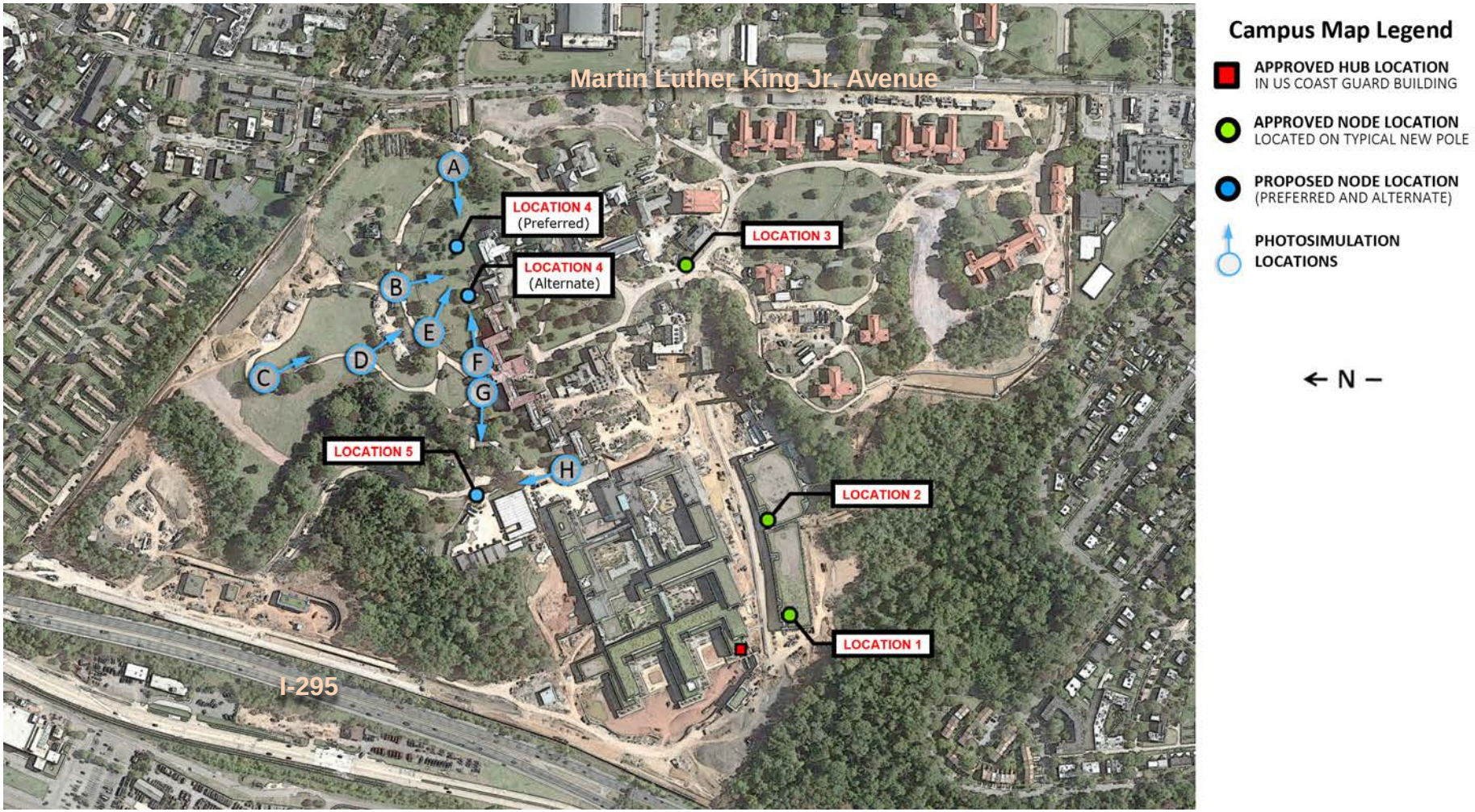
COLOR CODE ON SITE PLAN - SEE EX1.01

Note: Additional utility line is shown extending in both directions from the pole.

Proposed Antennas: Node Locations 4 & 5 – West Campus Overview



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NODE 4 VISIBILITY

Photo A - Preferred: Node 4 is visible looking west near Gate 1

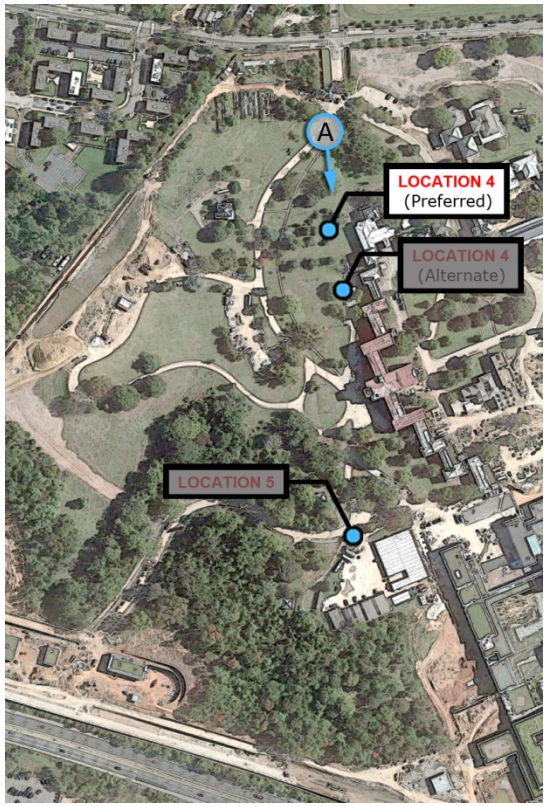

Photo location map

NODE 4 VISIBILITY

Photo A - Alternate: Node 4 is visible looking west near Gate 1

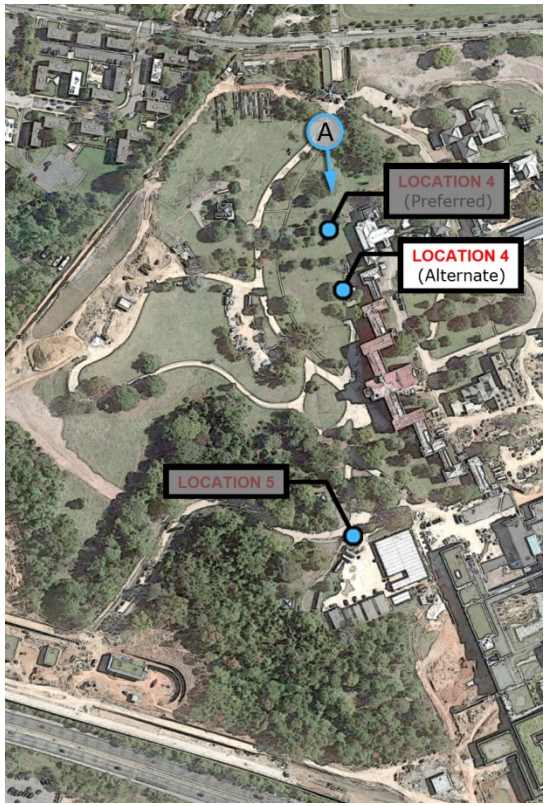

Photo location map

NODE 4 VISIBILITY

Photo B: Node 4 is not visible looking south from road to east point road

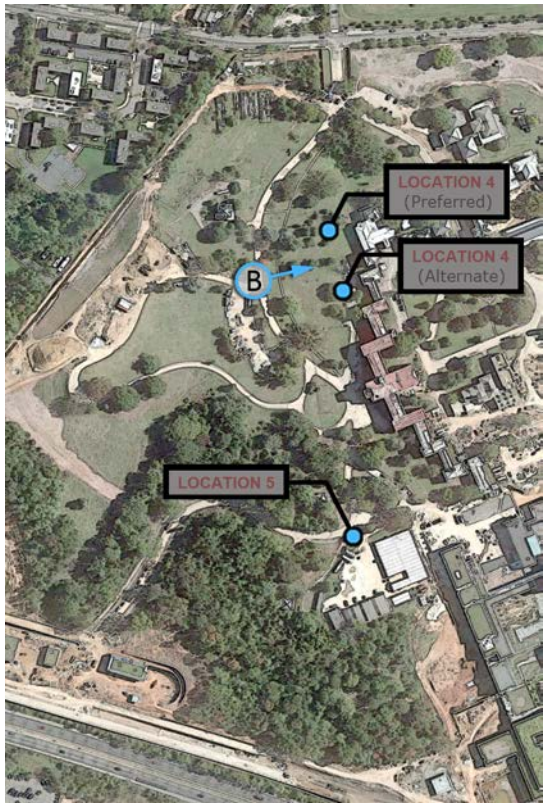

Photo location map

NODE 4 VISIBILITY

Photo C: Node 4 is not visible looking south from this vantage point

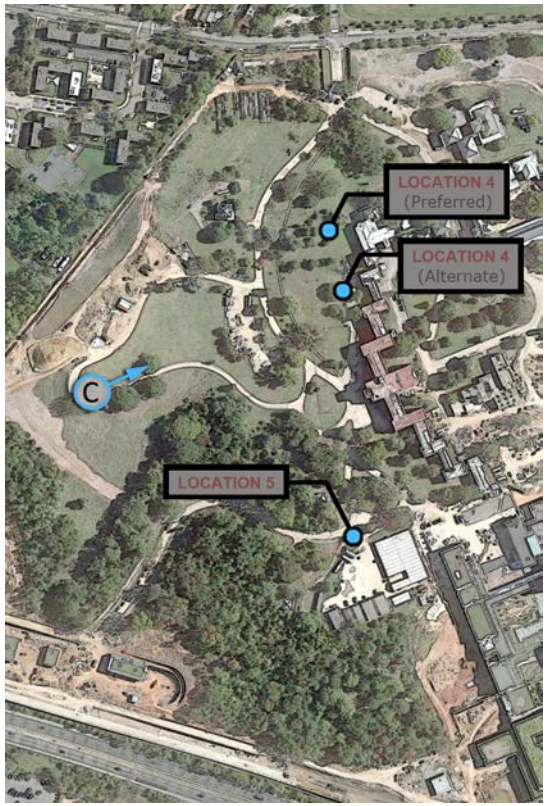

Photo location map

NODE 4 VISIBILITY

Photo D: Node 4 is not visible looking south from Point Road curve

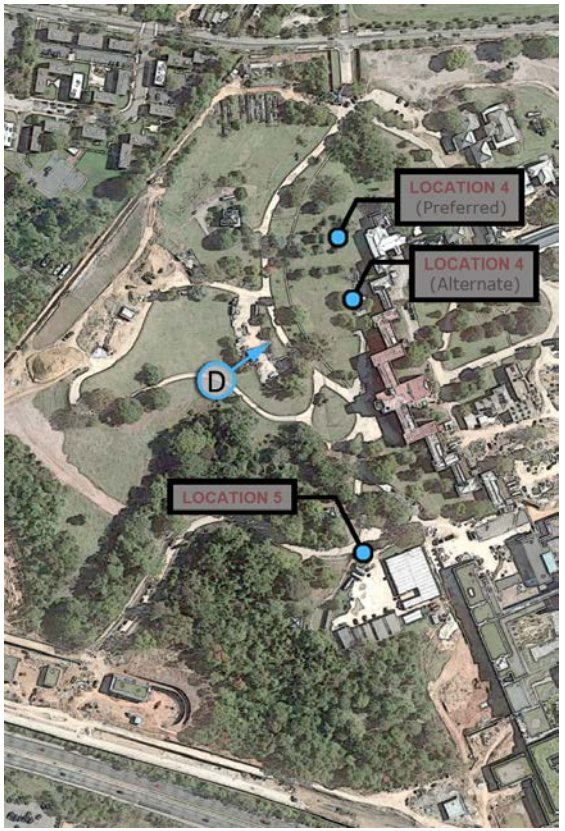

Photo location map

NODE 4 VISIBILITY

Panning slightly to the left of the previous shot

Photo D: Node 4 is not visible looking south from Point Road curve

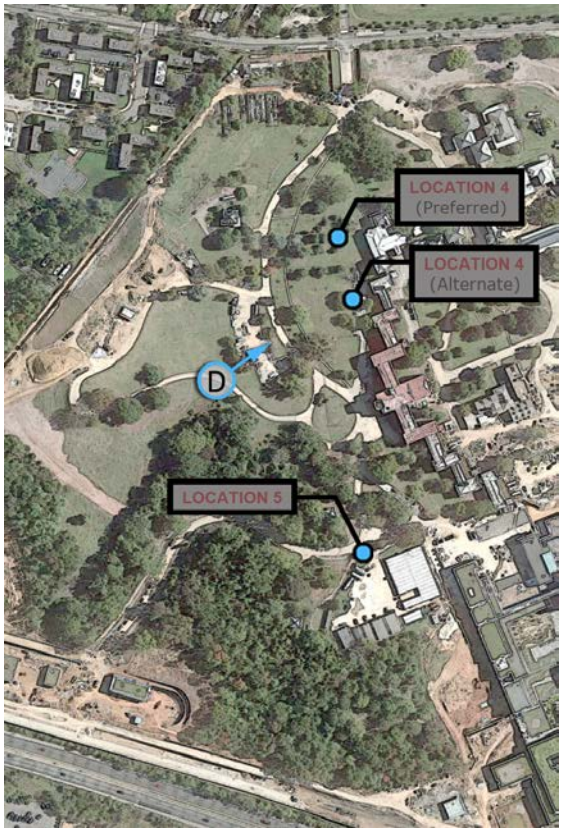

Photo location map

NODE 4 VISIBILITY

Photo E - Preferred: Node 4 is visible looking south from this vantage as shown

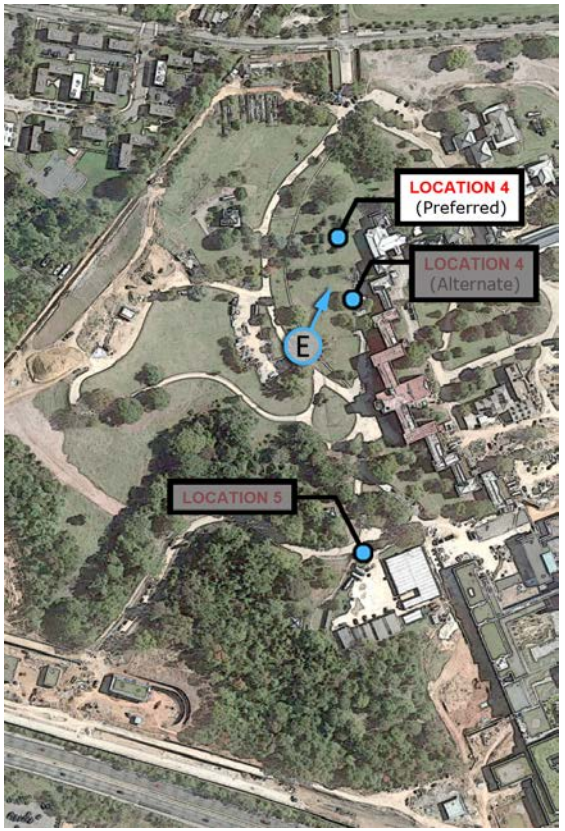

Photo location map

NODE 4 VISIBILITY

Photo E - Alternate: Node 4 is visible looking south from this vantage as shown

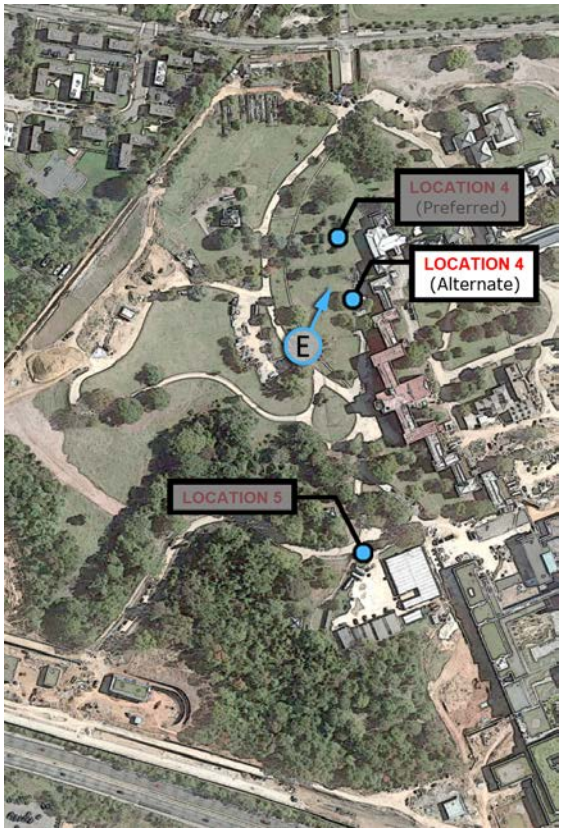

Photo location map

NODE 4 VISIBILITY

Photo F - Preferred: Node 4 is visible looking east from front of Center building

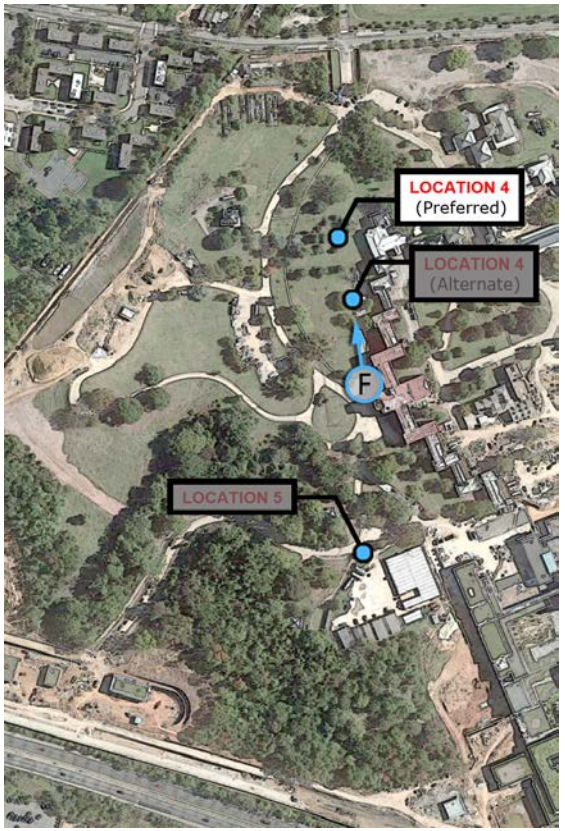

Photo location map

NODE 4 VISIBILITY

Photo F - Alternate: Node 4 is visible looking east from front of Center building

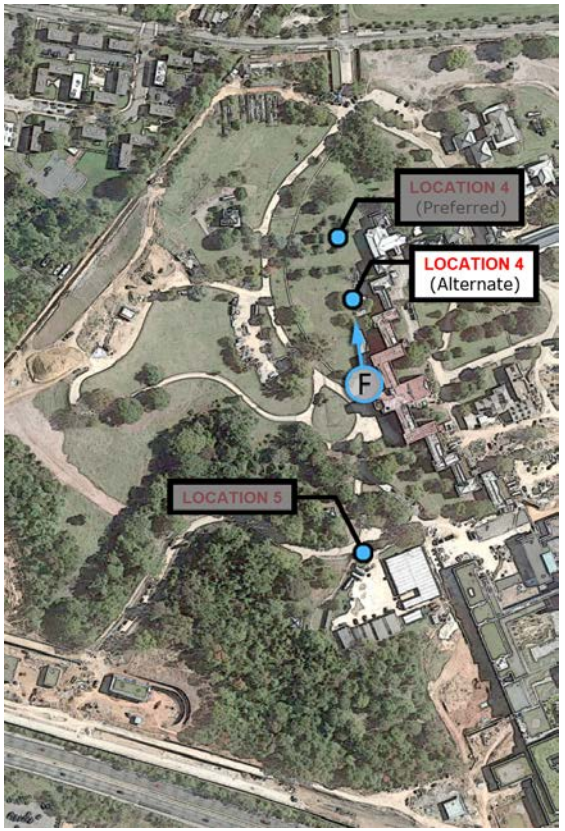

Photo location map

NODE 5 VISIBILITY

Photo G: Node 5 is not visible looking west from front of Center building

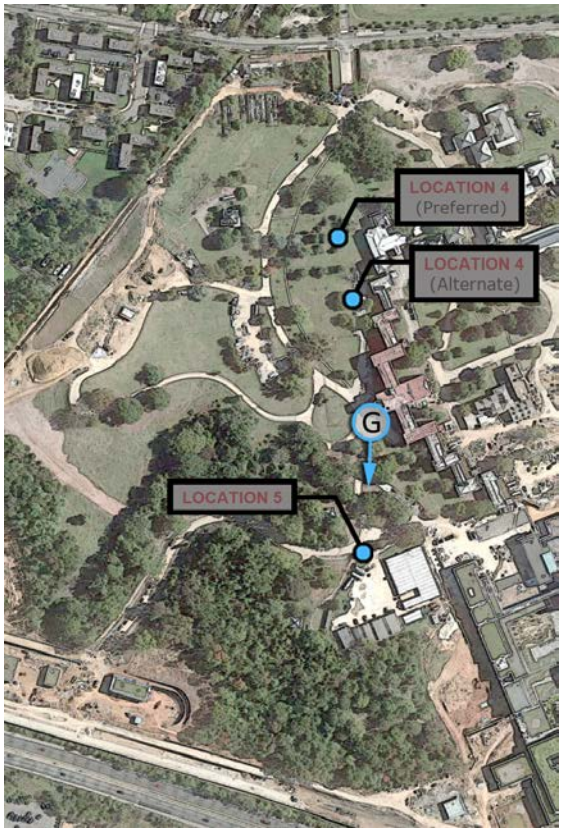

Photo location map

NODE 5 VISIBILITY

Photo H: Node 5 is visible looking north from the Coast Guard ceremonial courtyard

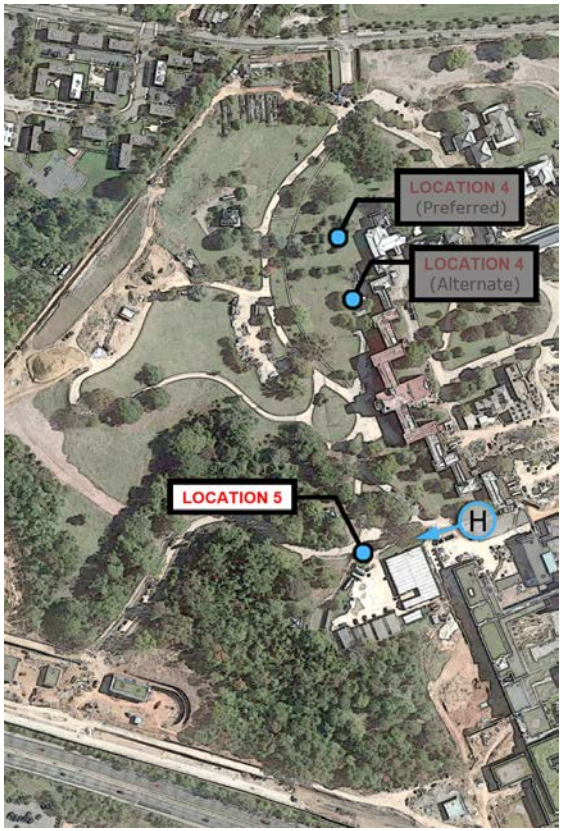

Photo location map